PROSKURNIN, M. A., OREKHOV, V. D., BAREIKO, Ye. V. and CHERNOVA, A. I.,
(Physicochemical Inst im L. Ya. Karpov)

"Sensitization of Radio-chemical Processes in Water Solutions"

Isotopes and Radiation in Chemistry, Collection of Papers of 2nd All-Union Sci.Tech. Conf. on Use of Radioactive and Stable Isotopes and Radiation in National Economy and Science, Moscow, Izd-vo AN SSSR, 1958, 380pp.

This volume publishes the reports of the Chemistry Section of the 2nd All Sci Tech Conf on Use of Radioactive and Stable Isotopes and Radiation in Science and the National Economy, sponsored by Acad. Sci. USSR and Main Admin for Utilization of Atomic Energy under Council of Ministers USSR, Moscow, 4-12 April 1957.

CHERNOVA, A. I., OREKHOV, V. D. and PROSKURIN, M. A.

"Formation and Transformation of Oxygen Compounds of Iron in the Radiolysis of Water Solutions" p. 55

Trudy Transactions of the First Conference on Radioaction Chemistry, Moscow, Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscow

21(1) SOV/89-5-5-16/27

AUTHORS: Chzhan Man'-vey, Chernova, A. I., Proskurnin, M. A.

TITLE: The Stability of Ion-Exchanging Resins in Aqueous Solutions Subjected to the Action of γ-Radiation of Co^{60} (Ustoychivost' ionoobmennykh smol v vodnykh rastvorakh pri vozdeystvii γ-izlucheniya Co^{60})

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 5, pp 573-575 (USSR)

ABSTRACT: The resins SDV-3 and MMG -1 were irradiated by means of a Co^{60}-source. The average γ-dose rate extended from 68,1 to 1250 r/s. All resin solutions were exposed in glass ampoules. For the liquid phase water, a saturated NaCl solution, 1,8 % sulfuric acid, and 1 m acetic acid were used.
In water SDV-3 was irradiated as a hydrogen- and MMG -1 as hydroxyl-compound. In the acid solutions SDV-3 was irradiated as sodium.
The physico-chemical parameters of the resins were determined in accordance with GOST-4 Nr 5695 Gruppa L-99. For SDV-3 the static capacity (SOE) with respect to uranyl ions was, in addition, measured.

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The Stability of Ion-Exchanging Resins in Aqueous Solutions Subjected to the Action of γ-Radiation of Co^{60}

The radioresistance of the resins was also determined on the basis of the oxidizability of a permanganate solution which was in contact with the resin during irradiation. The formation of hydrogen peroxide was determined polarographically by means of a 0,1 n ammonium chloride as carrier electrolyte. Results are given in form of 3 tables and 3 curves.
The destruction of the resins is accompanied by an increase of the (SOE). This is indicative of an increase of the number of ion-exchanging functional groups in the resin.
The inclination of the resins towards capturing hydroxyl radicals confirms the results obtained by a test carried out with SDV-3 with an irradiation dose of 60 r/s.
Contact between the resins and acidified water reduces the formation of hydrogen peroxide considerably.
The increase of the capability of swelling and of the moistness of SDV-3 is accompanied by a noticeable decrease of acidity. There are 3 figures, 3 tables, and 6 references, 3 of which are Soviet.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308610003-0"

5(4)
AUTHORS: Chernova, A. I., Orekhov, V. D., Proskurnin, M. A. SOV/76-32-12-29/32

TITLE: On the "Primary" Formation of H_2 and H_2O_2 Under the Action of γ-Rays on Aqueous Solutions of Mohr's Salt (O "pervichnom" obrazovanii H_2 i H_2O_2 pri deystvii γ-izlucheniya na vodnyye rastvory soli Mora)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2843-2844 (USSR)

ABSTRACT: In a paper by E. J. Hart and P. D. Walsh (Ref 10) the formula $2H_2O \rightarrow H_2+H_2O_2$ was mentioned as the most probable primary reaction among the possible formulae for the radiolytic decomposition of water forming H_2 and H_2O_2. The present paper deals with a repetition and an extension of these experiments. The source of radiation was Co^{60} with a dosage of 70r/sec. The effect of the γ-rays on 10^{-3}m solutions of $FeSO_4$ in sulfuric acid (10^{-3} to 4n) at an ion content of 10^{-6} to 1m Cu^{++} was

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On the "Primary" Formation of H_2 and H_2O_2 Under the Action of γ-Rays on Aqueous Solutions of Mohr's Salt

SOV/76-32-12-29/32

investigated. The Fe^{+++}-ion and gaseous hydrogen yields were measured. The test results may also be explained by reactions of the dissolved ions (radicals) and cannot be considered proof of the primary formation of H_2 and H_2O_2. There are 2 figures and 11 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva (The Moscow Institute of Physical Chemistry imeni L. Ya. Karpov, Moscow)

SUBMITTED: June 2, 1958

Card 2/2

CHERNOVA, A.I., kand.med.nauk

Blood protein fractions in atherosclerosis during iodine therapy. Nauch. trudy L'vov.obl.therap.ob-va no.1:308-311 '61. (MIRA 16:5)

1. Kafedra propedevticheskoy terapii pediatricheskogo i stomatologicheskogo fakul'tetov L'vovskogo meditsinskogo instituta.
(ARTERIOSCLEROSIS) (IODINE—THERAPEUTIC USE)
(BLOOD PROTEINS)

S/081/62/000/002/013/107
B149/B102

AUTHORS: Proskurnin, M. A., Orekhov, V. D., Chernova, A. I.

TITLE: Transformation of dissolved substances on radiolysis of aqueous solutions

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 79, abstract 2B568 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, 1959. v. I. Tashkent, AN UzSSR, 1961, 339 - 347)

TEXT: The amount of Fe^{3+} reduced during radiolysis of aqueous solutions rises with increasing pH and Fe^{3+} concentration. In the presence of glycerol, the yield approaches 10 (pH 3). A significant effect on the yield is produced by addition of Na_2SO_4. Experimental data obtained from solutions of Fe^{2+} revealed a considerable dependence of $G(Fe^{3+})$ on the concentration of Fe^{2+}. The maximum yield was 10.5 M. The experimental results in both systems are explained by the involvement of radicals from excited water molecules in the radiochemical reactions; this effect is

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Transformation of dissolved...

observable at high concentrations and in the presence of conjugate acceptors. The dichromate ion is reduced during radiolysis, and its yield strongly depends on the pH of the solution. Reduction is high at high pH whereas $G(Cr^{3+}) \simeq 0$. It is presumed that this is related to the formation of a complex ion radical of the chromate ion and OH. [Abstracter's note: Complete translation.]

Card 2/2

22007
S/076/61/035/004/015/018
B106/B201

26.2510

AUTHORS: Proskurnin, M. A., Orekhov, V. D., and Chernova, A. I.

TITLE: Conversion of dissolved substances in the radiolysis of aqueous solutions

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 4, 1961, 920 - 926

TEXT: A study has been made of the dependence of the rates of radiation-chemical processes taking place in aqueous medium on the concentration of the dissolved substance and on the pH value of the solution. Three categories of chemically active intermediates of radiolytic decomposition of water were assumed to exist in this connection: 1) H and OH radicals arising at a large distance from one another by ionization of water molecules:

$H_2O \rightsquigarrow H_2O^+ + e^-$; $H_2O^+ + H_2O \longrightarrow H_3O^+ + OH$;

$e^- + H_2O \longrightarrow H_2O^-$; $H_2O^- + H_2O \longrightarrow OH^- \cdot aq + H$;

2) H and OH radicals formed by the dissociation of excited water molecules

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S/076/61/035/004/015/018
B106/B201

Conversion of dissolved ...

having no sufficiently high excess of kinetic energy to leave the solvent cell. These free radicals are formed together in one cell. 3) Excited water molecules with an excitation energy of about 5 ev. This excitation does not take place under the action of light, but is possible by electron impact. The radicals of the first two categories react with the same acceptors contained in the solution, which, however, in the case of radicals of the second category, should exhibit high concentrations (up to 4 M). Excited water molecules can react with stable free radicals having the ability to absorb both components (H and OH) of the excited molecule, or with two different substances dissolved in water, one of which absorbs H radicals, and OH radicals the other. Each of these three categories arises with the radiolysis of water in a yield of about 4 pairs of free radicals per 100 ev of the energy absorbed by the solution. Thus, the total radiochemical yield of the decomposition of liquid water amounts to 12 molecules per 100 ev, which fits the results obtained from the radiolysis of water vapor. The readiest to react are the radicals of the first category with a dissolved substance. The authors proceeded from the assumption of the probability of such a reaction of a free radical being proportional to the

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Conversion of dissolved ...

concentrations of reacting particles and the reaction cross section to derive the following equation for yield G of the reaction products as a function of the acceptor concentration in the solution:

$$G = G_H \sum' \eta c_{ac} \sigma_{ac+H} / c_{ac} \sigma_{ac+H} + c_{OH} \sigma_{OH+H} + c_H \sigma_{H+H} \quad (1)$$

(c_{ac}, c_H, c_{OH} denoting the mean concentrations of the acceptor and of radicals H and OH; G_H the yield of radicals H or OH; σ the reaction cross section; η the part of all radicals, that reacts at the given mean concentration). The equation was derived by using a simplified diffusion model of the path of the ionizing particle, with the aid of which the mean concentrations of the radicals in the path were calculated. The calculation revealed that the first quarter of all resulting free radicals reacts at a mean concentration $c_1=1.5\cdot10^{-5}$ M, the second quarter at $c_2=3\cdot10^{-6}$ M, the third quarter at $c_3=3\cdot10^{-7}$ M, and the rest at $c_4=6\cdot10^{-8}$ M. The summation sign in Eq. (1) unites four terms which correspond to the four mean concentrations of the free radicals. η has, therefore, the value 0.25 in this example. Eq.(1)

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served as a basis for drawing the theoretical curves of the yield of radiation-chemical conversions as a function of the acceptor concentration in the solution. It was assumed in this connection that radicals of the first category and 30% of the second category take part in the reaction, and a distant effect was excluded. These curves are presented in Fig. 1. The experimental data obtained by the authors in the study of several radiation-chemical processes fitted these curves well (radiation-chemical reduction of nitrates in alkaline aqueous solutions; reduction of Fe^{3+} by radiolytically prepared H atoms). Several examples show that the free radicals arising in the radiolysis of water do not exist in free form, but immediately form complex compounds with the substances that are present in the solution (in electrolyte solutions, e.g., with anions and cations). These complex compounds have different degrees of stability and are destroyed when meeting more efficient acceptors for the free radicals. There are 5 figures and 15 references: 6 Soviet-bloc and 9 non-Soviet-bloc. The three most recent references to English language publications read as follows: R. F. Firestone, J. Amer. Chem. Soc., 79, 5593, 1957; R. H. Noyes, J. Amer. Chem. Soc., 77, 2042, 1959; F. S. Dainton, Trans. Faraday

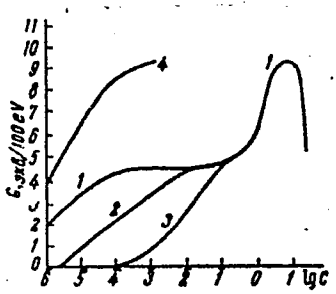
Conversion of dissolved ...

Soc., 53, 333, 1957.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: July 30, 1959

Fig. 1



Legend to Fig. 1: Ordinates - G, equiv./100 ev; 1 - most efficient acceptor, σ_{ac+H}, σ_{H+OH}, and σ_{H+H} are of the same order of magnitude; 2 - less efficient acceptor, σ_{ac+H} amounts to 0.01 of σ_{H+OH} or σ_{H+H}; 3 - effect of a competing acceptor; 4 - effect of an acceptor that transforms the radicals.

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S/020/61/136/002/030/034
B004/B056

AUTHORS: Safarov, S. A., Chernova, A. I., and Proskurnin, M. A.

TITLE: Effect of Gamma Radiation Upon Aqueous Solutions of Thiophene

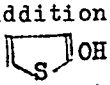
PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 2, pp. 391-393

TEXT: The authors intended to extend the study of radiolytic oxidation to heterocyclic compounds, especially to the thiophene series. As oxy-derivatives of thiophene cannot be obtained by the usual oxidation methods, great practical importance is attached to their radiolytic synthesis. An investigation was carried out of the effect of a radiation source equivalent to 50 g Ra at doses of $(0.5\text{-}1.1)\cdot10^{15}$ ev/ml.sec upon thiophene dissolved in oxygen-saturated water. The O_2 pressure was varied between 1 and 25 atm. The concentration of thiophene was $1.265\cdot10^{-2}$ mole/l. The formation of hydroxythiophene (thienol) was colorimetrically and spectrophotometrically investigated. Colorimetrically, the reaction of thienol with p-nitroaniline and sulfanilic acid was examined, the coloring

Effect of Gamma Radiation Upon Aqueous Solutions of Thiophene

S/020/61/136/002/030/034
B004/B056

(λ_{max} = 520 mμ) characteristic of phenol compounds being obtained. By means of an СФ-4 (SF-4) spectrophotometer, the spectra of initial and irradiated thiophene were recorded (Fig. 1). In 0.8 N H_2SO_4, the optical density determined at 260 mμ increased with increasing radiation dose, whereas the thienol yield decreased even at increased oxygen pressure. This is explained by chemical conversions which take place quickly in an acid solution. In a neutral solution, the yield dropped at much higher doses, and increased oxygen pressure extended the linear part of the curve. Addition of OH radicals to thiophene under the formation of



is assumed. The curve of thiophene oxidation as a function of pH (Fig. 4) is similar to that obtained for benzene (Ref. 6), which confirms the same reaction mechanism. The same character was shown by the introduction of competing acceptors of OH radicals. With an addition of 0.5 N glycerin, the formation of thienol stopped. Under favorable conditions, the maximum thienol yield was 8 equ/100 ev. There are 4 figures and 6 references: 3 Soviet, 1 US, and 2 British.

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Effect of Gamma Radiation Upon Aqueous Solutions of Thiophene

S/020/61/136/002/030/034
B004/B056

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov). Institut khimii Akademii nauk AzSSR (Institute of Chemistry of the Academy of Sciences Azerbaydzhanskaya SSR)

PRESENTED: July 7, 1960, by S. S. Medvedev, Academician

SUBMITTED: July 4, 1960

Legend to Fig. 1: 1) Spectrum of a non-irradiated thiophene solution. 2) Spectrum of an irradiated solution. 3) Extinction curve of α-hydroxy-thiophene (according to Ref. 2).
Legend to Fig. 4: a) mole/100 ev.

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Effect of Gamma Radiation Upon Aqueous Solutions of Thiophene

S/020/61/136/002/030/034
B004/B056

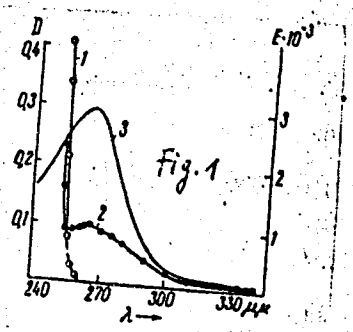

Fig. 1

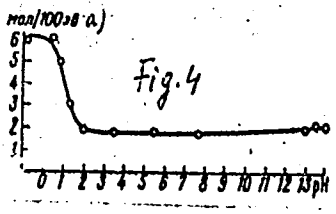

Fig. 4

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S/844/62/000/000/038/129
D214/D307

AUTHORS: Chernova, A. I., Orekhov, V. D. and Proskurnin, M. A. (deceased)

TITLE: Radiochemical nitration of aromatic compounds in aqueous solutions

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 233-236

TEXT: A study of the mechanism of radionitration of aromatic compounds in aqueous solution is described. The nitrations of C_6H_6, C_6H_5COOH, phenolsulfonic acid, salicylic acid and naphthalene-sulfonic acid by irradiating their H_2O solutions, in the presence of HNO_3, with γ rays, were achieved under mild conditions. Spectrophotometric analysis of the nitro products showed a shift to lower frequencies as compared to the spectra of the corresponding com-

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pounds obtained by conventional methods. This is due to a simultaneous radio-oxidation process. The presence of O_2 reduces the yields of the nitro compounds produced from C_6H_6 and C_6H_5COOH. Addition of NO_3^- salts increases the yield in the case of C_6H_5COOH but has no influence on the yield of nitration products of C_6H_6. Neither O_2 nor the addition of $NaNO_3$ influences the yield of radionitration of compounds containing -OH. The proposed mechanism is as follows: NO_3^- reacts with the primary radiolysis products ($\dot{H}$, $\dot{O}H$) to give ion radicals, $\dot{H}NO_3^-$ and $\dot{H}ONO_3^-$, each of which reacts with C_6H_6 to give $\dot{C}_6H_6NO_2$ and $\dot{C}_6H_6NO_3$ respectively; these interact to give $C_6H_5NO_2$. The inhibiting action of O_2 is due to: $\dot{H} + O_2 \longrightarrow H\dot{O}_2 \longrightarrow H_2O_2$. Proof of this mechanism can be obtained only after a more detailed study of this process. There are 4 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute im. L. Ya. Karpov)

S/844/62/000/000/041/129
D214/D307

AUTHORS: Safarov, S. A., Chernova, A. I., Bogatikov, B. F. and Proskurnin, M. A. (deceased)

TITLE: The radiochemical oxidation of thiophen in aqueous solutions

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 247-251

TEXT: The radiochemical oxidations of aqueous solutions of thiophen (1.26×10^{-2} M) were studied both in the presence and absence of O_2. The source of radiation (dose strength $0.5 - 40 \times 10^{15}$ ev/ml. sec) was Co^{60}. The oxidation product, thienol, was identified and quantitatively estimated by uv spectroscopy. In the absence of O_2 the yields of thienol were small but a stable, white precipitate was obtained whose yield was proportional to the dose of irradiation. Small quantities of H_2 were evolved, in yields proportional

Card 1/2

The radiochemical oxidation ...

to the dose and decreasing with pH (0.5 mol/100 ev at pH 9, 0.3 mol/100 ev at pH 0.4). The white precipitate was shown to be a hydroxy-derivative of dithienyl and is believed to be formed by the interaction of the primary radiolysis products (H, OH) with thiophen to give secondary radicals HC_4H_4S and HOC_4H_4S, which in turn interact to give $5H_6C_4\text{-}C_4H_3(OH)S$. In the presence of O_2, thienol is the main product (6 mol/100 ev at 10^{18} ev/ml) but the yield falls by a factor of 3 on raising the pH from 0.4 to 2. Thienol is formed by the disproportionation of HOC_4H_4S. Although the presence of anions is disregarded in the proposed mechanism, it explains the observed pH effect. There are 5 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Institut khimii AN AzSSR (Physico-Chemical Institute im. L. Ya. Karpov, Institute of Chemistry AS AzSSR)

Card 2/2

L 29541-66 EWT(m)/EWP(j) WW/JW/GG/RM

ACC NR: AP6007773 SOURCE CODE: UR/0195/66/007/001/0049/0054

AUTHOR: Chernova, A. I.; Orekhov, V. D.

ORG: Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov (Moskovskiy institut tonkoy khimicheskoy tekhnologii)

TITLE: Nature and kinetics of accumulation of products formed by the radiolysis of benzene in aqueous solutions of sodium nitrate

SOURCE: Kinetika i kataliz, v. 7, no. 1, 1966, 49-54

TOPIC TAGS: benzene, gamma radiation, radiation effect, phenol, organic nitroso compound, organic nitro compound, nitration, hydroquinone, pyrocatechol

ABSTRACT: The qualitative composition and kinetics of accumulation of benzene radiolysis products in a 0.5 M aqueous solution of sodium nitrate were investigated. Co^{60} gamma radiation in doses from 0.05 to 1 Mrad was used. In the initial dose range, the stable products are nitrobenzene (which forms only in the absence of oxygen), nitrophenols, phenol, nitrous acid, and hydrogen peroxide. Radiation-induced nitration of benzene is observed in the range of pH below 6.0 and the oxidation of

Card 1/2 UDC: 541.15 : 547.53

its molecules continues at higher pH values. As the dose increases, nitrobenzene in an inert atmosphere converts into dinitrobenzene, and nitrophenol changes into dinitrophenol. The main direction of the conversion of phenol is radiolytic nitration; a side direction is a nonradiolytic reaction with nitrous acid, forming nitroso compounds and nitrophenol. At pH values exceeding 6.0, phenol radiolytically oxidizes into hydroquinone and pyrocatechol. At pH values above 7.0, precipitation of insoluble dimerization products is observed. Orig. art. has: 3 figures and 1 table.

SUB CODE: 07/ SUBM DATE: 18Jun64/ ORIG REF: 009/ OTH REF: 007

CHERNOVA, A.I., kand.med.nauk

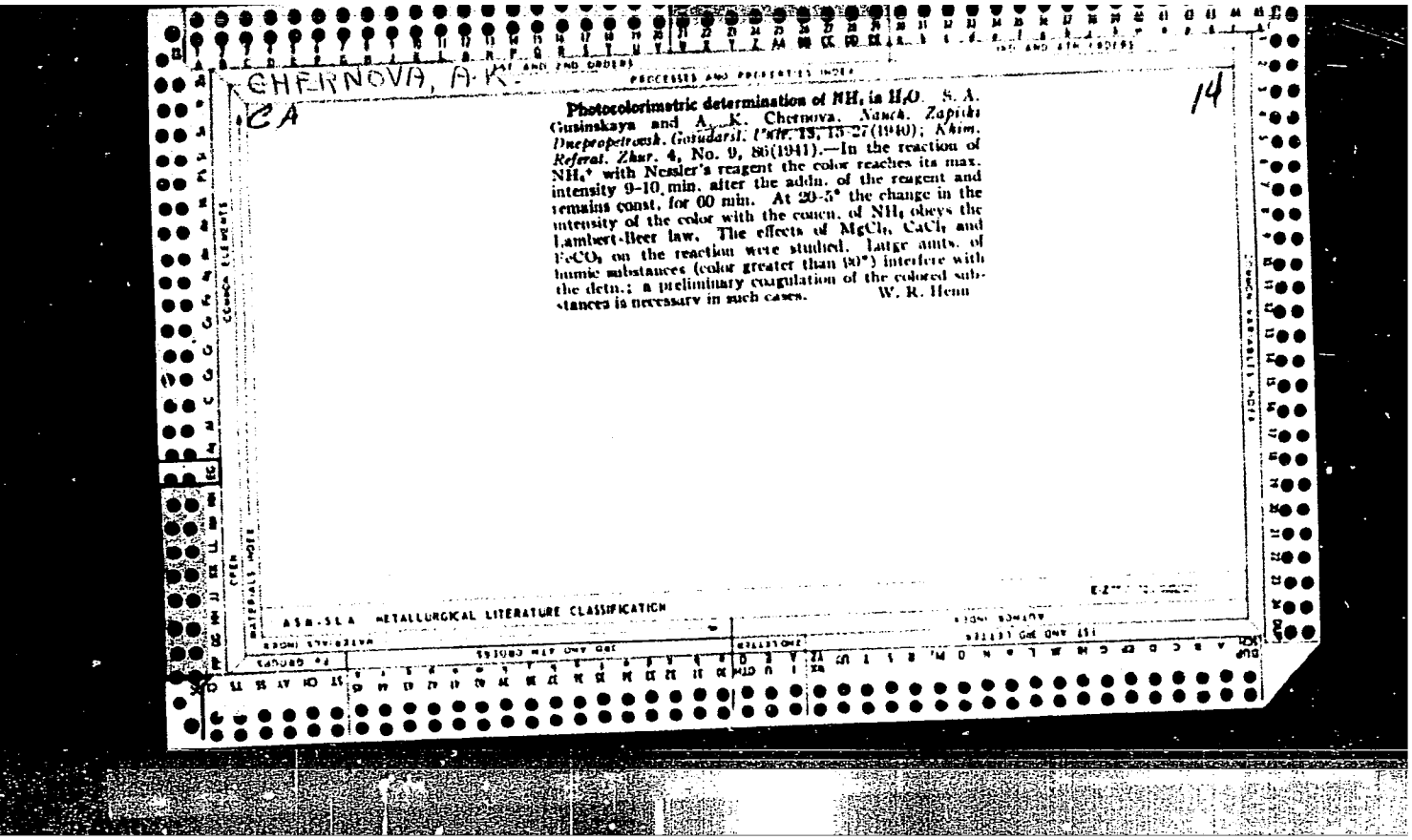
Study of blood protein fractions by the electrophoresis method in coronary atherosclerosis. Vrach. delo no.12:28-32 D '61. (MIRA 15:1)

1. Kafedra propedevticheskoy terapii (zav. - dotsent P.F.Popelyuk) pediatricheskogo i stomatologicheskogo fakul'teta L'vovskogo meditsinskogo instituta.
(BLOOD PROTEINS) (ELECTROPHORESIS)
(ARTERIOSCLEROSIS)

CHERNOVA, A.I., kand.med.nauk

Functional state of the liver in rheumatic fever with a lesion of the heart as a dominent feature. Nauch.trudy L'vov.obl.terp.ob-va no.1:71-76 '61. (MIRA 16:5)

1. Kafedra propedevticheskoy terapii pediatricheskogo i sanitarno-gigiyenicheskogo fakul'tetov (zav. kafedroy - dotsent P.F. Popel-yuk) L'vovskogo meditsinskogo instituta.
(LIVER--DISEASES) (RHEUMATIC HEART DISEASE)



CHERNOVA, A.K.

CA

14

Photocolorimetric determination of NH_3 in H_2O. S. A. Gusinskaya and A. K. Chernova. *Nauch. Zapiski Dnepropetrovsk. Gosudarst. Univ.* 13, 13-27(1940); *Khim. Referat. Zhur.* 4, No. 9, 86(1941).—In the reaction of NH_4^+ with Nessler's reagent the color reaches its max. intensity 9-10 min. after the addn. of the reagent and remains const. for 60 min. At 20-5° the change in the intensity of the color with the concn. of NH_3 obeys the Lambert-Beer law. The effects of $MgCl_2$, $CaCl_2$ and $FeCO_3$ on the reaction were studied. Large amts. of humic substances (color greater than 30°) interfere with the detn.; a preliminary coagulation of the colored substances is necessary in such cases. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CHERNOVA, A. K.

Reznik, B. Ye, and Chernova, A. K. - "The determination of iron in natural water by the photoelectric method," Report 1, Nauch. zapiski (Dne ropetr. ;os, un-t), Vol, XXXIII, 1948, p. 145-55, - Bibliog: 8 items

SO: U-5240, 17, Dec. 53, (Letopis 'Zhurnal 'nykh Statey, No. 25, 1949).

CHERNOVA, A. K.

Reznik, B. Ye, and Chernova, A. K. - "The determination of the bivalent iron concentration in natural water," Report 2, Nauch. zapiski (Dnepropetr. gos. un-t), Vol. XXXIII, 1948, P. 157-61

SO: U-5240, 17, Dec. 53, (Letopis 'Zhurnal'nykh Statey, No. 23, 1949).

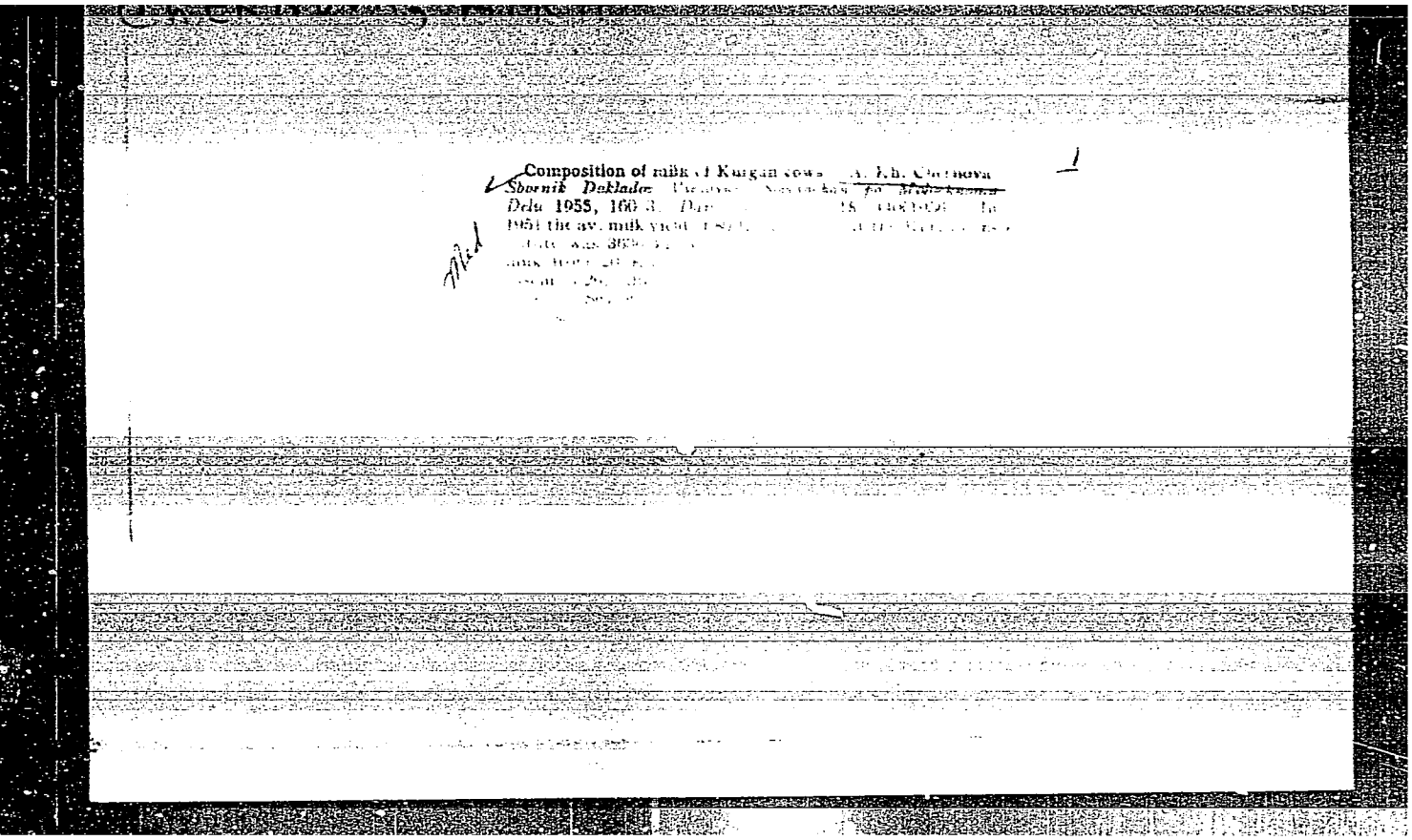
CHERNOVA, A.K., dotsent

Extermination spraying. Zashch. rast. ot vred. i bol. 9 no.12:20-22 '64. (MIRA 18:4)

1. Krymskiy sel'skokhozyaystvennyy institut.

LODOCHNIKOV, E.A., inzh.; PALIY, I.M., inzh.; FARKHULLIN, N.N., inzh.; OLIFIRENKO, Yu.N., inzh.; CHERNOVA, A.K., inzh.

New types of step-by-step motors. Elektrotekhnika 36 no.1:38-40 Ja '65. (MIRA 18:3)



Composition of milk of Kurgan cows [illegible]

Sbornik Doklado [illegible]

Delu 1955, 160 [illegible]

1951 the av. milk yield [illegible]

DRAZNIN, N.M.; CHERNOVA, A.M. (Minsk)

Treatment of thyrotoxicosis with radioactive iodine. Probl. endokr. i gorm. 4 no.5:49-54 S-O '58. (MIRA 11:12)

1. Iz Belorusskogo respublikanskogo protivozobnogo dispansera (glavvrach - kandidat meditsinskikh nauk N.M. Draznin).

(IODINE, radioactive,
ther. of hyperthyroidism (Rus))
(HYPERTHYROIDISM, ther.
radioiodine (Rus))

CHERNOVA, A.N.

AID P - 2960

Subject : USSR/Electricity

Card 1/1 Pub. 29 - 10/35

Authors : Kiselev, V. I., Technician, and A. N. Chernova, Eng.

Title : Reestablishment of exchange capacity of sodium- and hydrogen-zeolite filters during flood

Periodical : Energetik, 5, 14-15, My 1955

Abstract : During annual floods of the Belaya River, the quantity of suspended matter in the feed-water of a steam electric power station working with the river water greatly increases. The authors describe the method used to reestablish regular functioning of feed-water-treatment apparatus.

Institution : None

Submitted : No date

PUTYRSKAIA, G.V. (Budapest XIV, Hungaria korut 114); CHERNOVA, A.N. (Budapest XIV, Hungaria korut 114); MATUSH, L. (Budapest XIV, Hungaria korut 114)

Direct quantitative determination of free radicals formed at the radiolysis of water with the use of stable free radicals; a preliminary communication. In Russian. Acta chimica Hung. 21 no.3:289-291 '59.
(EEAI 9:5)

1. Central Research Institute for Chemistry, Hungarian Academy of Sciences, Budapest.
(Radicals (Chemistry)) (Radiochemistry) (Water)

CHERNOVA, A. P.

Akulov, N. S., Blokhina, O. I., Bol'shova, K.M., and Chernova, A. P. Investigation of the constant of the anistropy of energy in triple alloys of the system Ni-Cu-Mo. P 855

The constant of anistropy for the triple system Ni-Cu-Mo changes as the amount of copper and molybdenum are increased.

Scientific Research Inst. of Physics, Moscow State University
July 7, 1948

SO: Journal of Technical Physics, (USSR) 19, No. 8 (1949)

CHERNOVA, A. S.

"Veterinary and Sanitary Appraisal of Nutrionally Substandard Products." Cand Vet Sci, Leningrad Veterinary Inst, Min Higher Education, Leningrad, 1954. (KL, No 10, Mar 55)

SO: Sum. No. 670, 29 Sep 55--Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

YAKOVLEV, L.A., prof.; CHERNOVA, A.S., assistent

Varieties and examination of honey. Trudy SZVI 11:195-207 '62.
(MIRA 16:7)
(Honey)

CHERNOVA, A.S., assistent

Some data on the antibiotic characteristics of sour milk products and the introduction of the use of acidophilus milk in animal husbandry. Trudy SZVI 11:183-193 '62.
(MIRA 16:7)

(Antibiotics) (Milk, Acidophilus)
(Veterinary materia medica and pharmacy)

KITAYEV, Yu.P.; BUDNIKOV, G.K.; CHERNOVA, A.V.

Tautomerism and geometric isomerism of nitrogen-containing derivatives of carbonyl compounds. Report No.7: Ultraviolet spectra of some semi- and thiosemicarbazones. Izv.AN SSSR.Otd. khim.nauk no.7:1208-1213 Jl '62. (MIRA 15:7)

1. Khimicheskiy institut im. A.Ye.Arbuzova AN SSSR.
(Semicarbazones--Spectra)

L 9895-63 EPF(c)/EWP(j)/BDS/EWT(m)--ASD--Pr-4/Pc-4--RM/MAY/WW
ACCESSION NR: AP3000415 S/0076/63/037/005/1057/1062

AUTHOR: Dianov, M. P.; Chernova, A. V. 66 65

TITLE: Ultraviolet absorption spectra of some alkyl and alkaryl naphthalenes

SOURCE: AN SSSR. Zhurnal fizicheskoy khimii, v. 37, no. 5, 1963, 1057-1062

TOPIC TAGS: ultraviolet spectra, alkyl naphthalene, alkaryl naphthalene, 2,3,6-trimethylnaphthalene, tetramethylnaphthalene

ABSTRACT: The UV spectra of 2,3,6-trimethylnaphthalene are in agreement with the corresponding data in the literature on this compound isolated from Romashkin and Bavlinsk petroleum, but not with the spectra of the compound isolated from Trinidad petroleum. The spectra of 1,2,3,6- and 2,3,6,8-tetramethylnaphthalenes, while similar, are not identical, thus showing a certain difference in conjugation in these molecules. The spectra of 2,3,6-trimethyl-8-alkyl (i.e. ethyl, n-propyl, n-butyl) naphthalenes have been investigated. Their peaks have been shown to coincide and to possess close absorption values. Spectrophotometric investigation of compounds which in the naphthalene ring contain in addition to methyl substituents also the phenyl

Card 1/2

L 9895-63
ACCESSION NR: AP3000415

radical showed them to be non-coplanar. Orig. art. has: 3 figures and 4 tables.

ASSOCIATION: Khimicheskiy institut im. A. Ye. Arbuzova, AN SSSR (Chemical Institute, AN SSSR)

SUBMITTED: 04Apr63 DATE ACQ: 19Jun63 ENCL: 00

SUB CODE: 00 NR REF SOV: 006 OTHER: 014

Card 2/2

CHERNOVA, A.V.; SHAGIDULLIN, R.R.; KITAYEV, Yu.P.

Transformations of phenylhydrazones in solutions. Izv. AN SSSR. Ser. khim. no.8:1555 Ag '64. (MIRA 17:9)

1. Khimicheskiy institut im. A.Ye. Arbuzova AN SSSR, Kazan'.

SVIRIDENKO, F.F., inzh.; POPOVA, A.N., inzh.; FRADINA, M.G., inzh.; CHERNOVA, A.V., inzh.; TARASOVA, L.P., inzh.

Experimental production of 10-ton rail ingots. Stal' 20 no.8:699-701 Ag '60. (MIRA 13:7)

1. Zavod "Azovstal'."
(Steel ingots)

KAZARNOVSKIY, D.S.; DYUBIN, N.P.; GERSHGORN, M.A.; KRAVTSOVA, I.P.; KLIMOV, K.N.; RUDOL'SKIY, N.L.; FRADIN, M.D.; SVIRIDENKO, F.F.; FRADINA, M.G.; ZANNES, A.N.; CHERNOVA, A.V.

Experimental railroad rails made of chromium-nickel native alloy steel. Stal' 22 no.6:548-550 Je '62. (MIRA 16:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut metallov i zavod "Azovstal'".
(Chromium-nickel steel)
(Railroads--Rails)

PROTASOV, N.F., inzh.; SHUVALOV, B.I., inzh.; FRADINA, M.G., inzh.;
CHERNOVA, A.V., inzh.; RAKHANSKIY, B.I., inzh.

Properties and peculiarities in the production of type R-75
heavy rails. Stal' 23 no.8:731-733 Ag '63. (MIRA 16:9)
(Railroads--Rails) (Rolling (Metalwork))

FRADIN, M.D.; CHERNOVA, A.V.

Adopting the production of and producing 25-meter long railroad rails. Metallurg 8 no.12:22-24 D '63. (MIRA 17:4)

1. Zavod "Azovstal'".

L 05163-67 EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/RM

ACC NR: AP7000737 SOURCE CODE: UR/0062/66/000/006/1123/1124

59
58
B

SHAGIDULLIN, R. R., CHERNOVA, A. V., ISHMAYEVA, E. A., PUDOVIK, A. N.,
Institute of Organic and Physical Chemistry imeni A. E. Arbuzov, Academy of Sciences USSR (Instiutt organicheskoy i fizicheskoy khimii AN SSSR)

Question of Conjugation with Participation of the Phosphorus Atom"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, 1966, pp 1123-1124

Abstract: The ultraviolet and infrared absorption spectra and Raman spectra of compounds containing a diene group with substituents $-P\overset{O(S)}{\underset{(OR)_2}{}}$ and $-C\overset{O}{\underset{OR}{}}$ were investigated in comparison with isoprene. In the case of a terminal situation of the substituents, a bathochromic shift of the absorption maximum in the ultraviolet spectrum and a sharp increase in the intensity of the bands in the infrared spectrum and lines in the Raman spectrum of the valence vibrations of the C=C bonds is observed. These signs of conjugation are more pronounced for the carbonyl substituent. In the case of side substitution by two $-P\overset{O}{\underset{(OR)_2}{}}$ groups, the opposite picture is observed: hypsochromic shift in

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UDC: 541.6 + 661.718.1

0923 1905

L 05163-67

ACC NR: AP7000737

the ultraviolet spectrum, decrease in intensities in the infrared and Raman spectra, indicating a decrease in the conjugation between the two C=C bonds, probably due to competition by the phosphorus portions of the molecule. Preliminary results on the intensities of the bands of the P=O and P=S bonds indicate the participation of these bonds in conjugation. Orig. art. has: 2 formulas. [JPRS: 37,023]

TOPIC TAGS: UV spectrum, IR spectrum, Raman spectrum, chemical bonding, chemical valence

SUB CODE: 07 / SUBM DATE: 17Mar66

Card 2/2 vmb

BEKKER, M.L.; KUTSEMAKINA, A.Z.; CHERNOVA, E.A.

Nucleoprotein fractions in vaccinal strains of plague bacteria.
Biokhimiia 25 no. 3:517-522 My-Je '60. (MIRA 14:4)

1. Research Antiplague Institute, Stavropol.
(PASTEURELLA PESTIS) (NUCLEOPROTEINS)

L 58853-65

ACCESSION NR: AP5011274 UR/0016/65/000/004/0027/0033

AUTHOR: Pryadkina, M. D.; Gavrilenkova, V. Yu.; Chernova, E. A. 33 32

TITLE: A study of pest-allergen of the Tarasevich State Control Institute in animals and volunteers

SOURCE: Zhurnal mikrobiologii, epidemiologii i immunobiologii, no. 4, 1965, 27-33

TOPIC TAGS: animal, man, allergen, pasteurella, pestis, immunization, test method

ABSTRACT: The pest-allergen of the Tarasevich State Control Institute represents a protein polysaccharide complex prepared from P. pestis. The preparation produces positive allergic reactions in immunized guinea pigs and no reactions in control nonimmunized animals. In a series of experiments on guinea pigs and humans, the pest-allergen was used to evaluate the allergic rearrangement of the body following immunization with different P. pestis vaccines. The pest-allergen tests established that the different plague bacteria vaccine strains do not produce the same allergic rearrangement of the

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L 58853-65

ACCESSION NR: AP5011274

body. The intracutaneous allergic reaction is an index of body immunity and can probably be used for preliminary indirect evaluation of a plague vaccine's immunogenicity. The pest-allergen injected intracutaneously is not harmful to animals or man. Investigations of 95 volunteers showed that humans immunized with plague vaccine react positively to the pest-allergen. However, more extensive research under more varied conditions is necessary to establish a conclusive correlation between allergic reaction to pest-allergen and immunity in man. Orig. art. has: 7 tables.

ASSOCIATION: Gosudarstvennyy kontrol'nyy institut meditsinskikh biologicheskikh preparatov im. Tarasevicha (State Control Institute of Medical Biological Preparations)

SUBMITTED: 14May64 ENCL: 00 SUB CODE: LS

NR REF SOV: 009 OTHER: 000

Card 2/2 hp

PRATUSEVICH, R.M.; ZUYEVA, M.Ya.; KUTINA, L.S.; MAYOROVA, L.P.; RODSHTEYN, O.A.; CHERNOVA, E.A.

Data for the study of the epidemic outbreak of serous meningitis in Monchegorsk in Murmansk Province during 1960. Trudy Len. inst. epid. i mikrobiol 26:199-210 '64. (MIRA 18:12)

1. Iz Nauchno-issledovatel'skogo instituta detskikh infektsiy, Instituta epidemiologii i mikrobiologii imeni Pastera, Leningrad i Gorodskoy bol'nitsy goroda Monchegorska.

CHERNOVA, E.N.; ANTONOVA, L.N.; LOVCHIKOVA, L.N.; SIDORENKO, V.Ya.; PANOV, A.A., otv. red.; FOMINA, E.A., red.

[Systematic catalog of Russian periodical and serial publications on medicine, 1792-1960] Sistematicheskii katalog otechestvennykh periodicheskikh i prodolzhaiushchikhsia izdanii po meditsine, 1792-1960. Leningrad, 1965. 495 p. (MIRA 18:12)

1. Akademiya nauk SSSR. Biblioteka. 2. Zaveduyushchiy otdelom sistematizatsii literatury Biblioteki AN SSSR (for Panov).

CHERNOVA, F., red.; GUMBINA, S., tekhn. red.

[Ocean submissive to people; documentary tales] Okean pokoriaetsia liudiam; dokumental'nye povesti. Vladivostok, Primorskoe knizhnoe izd-vo, 1961. 225 p. (MIRA 15:6)
(Survival(after airplane accidents, shipwrecks, etc.))

KHALILETSKIY, Georgiy Georgiyevich; CHERNOVA, F.A., red.; SHAYKOVA, N.I., tekhn. red.

[Second birth of a city] Vtoroe rozhdenie goroda. Vladivostok, Primorskoe knizhnoe izd-vo, 1961. 54 p. (MIRA 14:10)
(Vladivostok--Description)

ARSEN'YEV, Vladimir Klavdiyevich; CHERNOVA, F.A., red.; POTREBICH, N.N., tekhn. red.

[In the thickets of the Ussuriysk territory] V debriakh Ussuriiskogo kraia. Vladivostok, Primorskoe knizhnoe izd-vo, 1961. 518 p. (MIRA 15:4)
(Ussuriysk—Discovery and exploration)

L 60423-65 EWT(l)/EWP(e)/EWT(m)/EWP(l)/EWA(m)/T/EWP(t)/EWP(b)/EWA(h) Pz-6/
Pq-4/Pe5 IJP(c) BSW/JD/GS/AT/JL/JG
ACCLSSION NR. AT5017269 S/0000/65/000/000/0[illegible]/[illegible]

AUTHOR: Borisova, Z. U.; Chernova, G. A. 37/

TITLE: Electrical conductivity of the vitreous system As - S - Se

SOURCE: Leningrad. Universitet. Khimiya tverdogo tela (Chemistry of solids). Leningrad, Izd-vo Leningr. univ., 1965. 119-[illegible]

TOPIC TAGS: arsenic compound, sulfur compound, selenium compound, glass conductivity, vitreous semiconductor

ABSTRACT: The temperature dependence of the electrical conductivity in the As - S - Se system was studied in compositions containing excess selenium and sulfur in the region of the vitreous state. The specimens were subjected to different types of heat treatment, and the electrical conductivity, microhardness, density, and limits of light absorption were measured. Analysis of the microhardness, energies of conductivity and steric factors led the authors to the conclusion that the glasses can be divided into two groups. [illegible] Glasses without excess sulfur and with negative [illegible] due to [illegible] valence-coordination periodicity of the various [illegible] units and to the predominance of a chain-ribbon structure of $AsS_{3/2}$); this group is characterized by the closeness of ener-

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L 60423-65
ACCESSION NR: AT5017269

gies ε_λ and ε_γ, which indicates a low activation energy of electrical conductivity (ε_γ = 0.05-0.1 eV). (2) Glases containing excess sulfur and selenium, in which ε_γ and ε_σ differ considerably, indicating a relatively large activation energy, which in this case corresponds to the transformation energy ε_t of the covalent bonds. The value of log β corresponds to the entropy of activation and ranges from [illegible]. The properties of the glasses of the second group are determined mainly by the [illegible] characteristics [illegible]
art. has: 2 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 02Mar65 ENCL: 00 SUB CODE: MT, EM

NO REF SOV: 005 OTHER: 001

Card 2/2

L 27634-66 EWT(1) SCTB DD

ACC NR: AP6018427 (A, N) SOURCE CODE: UR/0325/65/000/003/0064/0067

27
B

AUTHOR: Chernova, G. G.; Kirzon, M. V.

ORG: Department of Animal Physiology, Moscow State University im. M. V. Lomonosov (Kafedra fiziologii zhivotnykh Moskovskogo gosudarstvennogo universiteta)

TITLE: Role of afferent pulsation from the respiratory musculature in respiratory regulation during excessive intrapulmonary oxygen pressure

SOURCE: Nauchnyye doklady vysshey shkoly. Biologicheskiye nauki, no. 3, 1965, 64-67

TOPIC TAGS: biologic respiration, cat, neurophysiology

ABSTRACT: Experiments were performed on narcotized cats whose spinal cord was exposed between C_6 and T_{10}. From 7 to 10 pairs of dorsal roots were severed at the C_7-T_9 level and then the spinal cord was half severed (dorsal column) at C_7. In the second series of experiments the reverse order was taken in severing the nerves. It was found that dorsal root afferent pulsation from the respiratory musculature during excessive (30 mm of mercury) intrapulmonary oxygen pressure affected both the bulbar respiratory center and the motoneurons of the spinal cord. But dorsal root deafferentation did not yield the expected change in the duration of apnea. Orig. art. has: 2 figures. [JPRS]

SUB CODE: 06 / SUBM DATE: 11May64 / ORIG REF: 008

Card 1/1 CC

CHERNOVA, G.G.

RAVEK, Miloslav, CHERNOVA, G.G., [translator].

Is continuous yarn spinning feasibl? Tekst. prom. 17 no.5:65-67 My '57. (MLRA 10:6)

(Czechoslovakia--Spinning)

L 25626-65
ACCESSION NR: AP4044891 S/0020/64/157/006/1490/1492

AUTHOR: Kirzon, M. V.; Chernova, G. G.

TITLE: Activity of neurons in the region of the respiratory center of the medulla oblongata under conditions of excess intrapulmonary oxygen pressure

SOURCE: AN SSSR. Doklady*, v. 157, no. 6, 1964, 1490-1492

TOPIC TAGS: medulla oblongata respiratory center, neuron activity, excess intrapulmonary oxygen pressure, neuron pulse

ABSTRACT: The tests were conducted on 25 nembutal-anesthesized cats which had undergone surgery for removal of the cerbellum. The pulses given off by the neurons were determined with tungsten electrodes at the rate of 2-5 neurons per cat. Oxygen was introduced into the lungs via the trachea. No external counter-pressure was applied. Three kinds of neurons had priorily been distinguished: (a) those with discharges only upon inspiration or expiration, (b) with continuous activity and increased frequency at inspiration and (c) continuous and discharge

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L 25626-65
ACCESSION NR: AP4044891

activity unrelated to the respiratory phases. Under the influence of excess intrapulmonary pressure, the respiratory center was seen to work on a new functional level. The b-neuron pulses lost their phase-like character, the c-neuron activity increased at the end of the breathing cycle; new pulses, of both the continuous and discharge kind were registered in neurons normally inactive during respiration. After termination of the experiments, all the neurons showed increased activity for 5-7 minutes before returning to normal. Orig. art. has: 3 figures

ASSOCIATION: Moskovskiy gosudarstvenyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 12May64 ENCL: 00 SUB CODE: LS

NR REF SOV: 004 OTHER: 006

Card 2/2

CHERNOVA, G.G.; KIRZON, M.V.

Role of the afferent pulsation from the respiratory musculature in the respiration control under excessive intrapulmonary oxygen pressure. Nauch.dokl.vys.shkoly; biol.nauki no.3:64-67 '65. (MIRA 18:8)

1. Rekomendovana kafedroy fiziologii zhivotnykh Moskovskogo gosudarstvennogo universiteta.

KNYAZEVA, R.N.; CHERNOVA, G.N.; OVCHINNIKOV, Yu.M.

Production of magnesium orthotellurate from metallic tellurium. Zhur neorg. khim.9 no.6: 1496 Je '63 (MIRA 17:8)

1. Ural'skiy gosudarstvennyy universitet imeni Gor'kogo, kafedra neorganicheskoy khimii.

CHERNOVA, G.G.; KIRZON, M.V.; SAPOZHOV, V.A.

Role of reflexes from the carotid sinus in the regulation of respiration in excessive intrapulmonary oxygen pressure. Biul. eksp. biol. i med. 59 no.2:50-54 F '65. (MIRA 18:7)

1. Kafedra fiziologii zhivotnykh (zav. - prof. B.A. Andryushov) Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.

L 38453-66

ACC NR: AP6024402 SOURCE CODE: UR/0219/66/062/007/0030/0034

AUTHOR: Chernova, G. G.; Kirzon, M. V.; Mass, A. M.

ORG: Department of Animal Physiology, Moscow State University (Kafedra fiziologii zhivotnykh Moskovskogo gosudarstvennogo universiteta)

TITLE: Respiratory afferent dorsal root impulsation during excess intrapulmonary oxygen pressure

SOURCE: Byulleten' eksperimental'noy biologii i meditsiny, v. 62, no. 7, 1966, 30-34

TOPIC TAGS: human physiology, respiratory physiology, pressure breathing, neurophysiology, ~~excess pressure apnea, apnea~~

ABSTRACT: Reflex apnea occurring in response to the onset of increased intrapulmonary pressure (≥ 5 mm Hg) results from inhibition of the respiratory center by afferent pulses from the vagus nerve. Its duration is affected by afferentation from the subcarotid zone, but not by afferentation from the dorsal nerve roots. Afferent impulsation in the dorsal nerve roots at the thoracic level during excess-pressure apnea was studied in nembutal-anesthetized (30 mg/kg intraperitoneally) cats. Intrapulmonary O_2 pressures of 5, 10, 20, and 30 mm Hg were used. After laminectomy from T_3 to T_7, dorsal roots were resected at the point of insertion into the spinal cord and the ends teased into thin bundles of fibers from which impulsation was recorded

Card 1/2 UDC: 612.24:612.275]:612.283

L 38453-66

ACC NR: AP6024402

with bipolar leads. Under normal respiratory conditions, afferent impulsation (currents of 50 to 200 μv in four or more afferent units of a bundle) was recorded in the dorsal roots (during inspiration in 21, expiration in 7, and continuously in 12 of 40 animals). During excess intrapulmonary pressure, total electrical activity in the dorsal roots increased, not with passive stretching of the rib cage due to internal pressure, but with active contraction of the intercostal muscles while the rib cage was stretched. Evidently this activity originates with muscle spindles capable of responding not only to tension but also to γ-activated muscle contraction, which is probably a more decisive factor during excess intrapulmonary pressure than stretching. This increase in total electrical activity in dorsal root fibers during inspiration is due both to more frequent discharge of active afferent units and to the participation of new units, either high-threshold spindles or tendon receptors. No dorsal root activity was seen during apnea. The reason for this is unclear, unless muscle spindles do not respond to extreme passive tension on the muscle alone. It is known that many expiratory discharges in dorsal root fibers result from the activity of spindles located in and responding to stretching of inspiratory muscles. If this is true of the expiratory units recorded in this study, then both the disappearance of their activity during excess intrapulmonary pressure and the absence of inspiratory activity during apnea are due to extreme stretching. Orig. art. has: 2 figures. [DP]

SUB CODE: 06/ SUBM DATE: 31Dec64/ ORIG REF: 007/ OTH REF: 011/ ATD PRESS: 5047

Card 2/2 mcp

L 10961-67 EWT(1) SCTB DD/GD SOURCE CODE: UR/0000/66/000/000/0198/0200
ACC NR: AT6036578

18

AUTHOR: Kirzon, M. V.; Chernova, G. G.

ORG: none

TITLE: Analysis at the neuron level of respiratory center readjustment under conditions of excess internal oxygen pressure breathing [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 198-200

TOPIC TAGS: hyperoxia, oxygen excess pressure, biologic respiration, autonomic nervous system, vagus nerve

ABSTRACT: The behavior of bulbar respiratory neurons during excess intrapulmonary pressure breathing was studied in nembutal-anesthetized or decerebrated cats. It was demonstrated that a readjustment does occur in respiratory center activity.

Various kinds of changes are seen in the activity of various respiratory neurons during excess intrapulmonary pressure breathing. Characteristic activity changes of two kinds occur during excess intrapulmonary pressure breathing in both inspiratory and expiratory neurons. Group I

Card 1/4

inspiratory and expiratory neurons, showing one kind of change, are the automatic respiratory neurons controlling the phase activity of the respiratory muscles. Group II inspiratory and expiratory neurons can lose their respiratory activity.

Apnea on commencing excess intrapulmonary pressure breathing results from inhibition, particularly of Group I inspiratory neurons, by continuous afferentation from the vagus nerve. Pulse frequency in individual afferent fibers at the onset of excess intrapulmonary pressure reaches 100 to 200 pulses/sec, which is near the frequencies of central vagus nerve stimulation at which inhibition of inspiration occurs.

During apnea a different kind of non-phased impulsation occurs in the remaining respiratory neurons. The activity of Group I expiratory neurons during apnea is probably due mainly to interconnections between Group I inspiratory and expiratory neurons.

Sudden resumption of breathing (deinhibition of Group I inspiratory neurons) is accomplished by afferent pulses from the carotid sinus zone. Vagus nerve afferentation increases as the moment when respiration is resumed approaches; this also indicates inhibition of Group I inspiratory

neurons (pulse frequency in individual vagus nerve fibers decreases to 70 to 100 pulses/sec).

Afferent pulses along dorsal nerve roots to respiratory muscles have no part in the resumption of breathing. This is probably because during apnea there is no basic afferent flow from the majority of respiratory muscle proprioceptors which are located in the respiratory muscles. During excess pressure breathing, these muscles exhibit phase activity. This proprioceptor impulsation pattern is evidently the result of considerable dependence of proprioceptor activity on the activity of the bulbar respiratory center itself, evoked by the gamma system, or else on the passive stretching of the respiratory muscles. During apnea the gamma system of the respiratory muscles is apparently inhibited at the bulbar level by lateral connections with the respiratory center. This inhibition is sufficient to nullify gamma activation of respiratory muscle proprioceptors.

During excess intrapulmonary pressure, respiratory movements are controlled by phase activity of Group I inspiratory and expiratory neurons. With prolonged exposure to excess intrapulmonary pressure, changes occur in the phase activity of these neurons, including changes in duration of volleys, pulse frequency in volleys, and the character of frequency vari-

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308610003-0"

L 10961-67
ACC NR: AT6036578

ations within volleys. Respiratory muscle activity during inhalation and exhalation is in correlation with the activity of these neurons.

Group II respiratory neurons show continuous activity both during active respiration and during apnea, with occasional variation in frequency from one phase of respiration to another. The activity of these neurons is very similar to unphased activity of the respiratory muscles.

During excess intrapulmonary pressure, respiratory neurons inactive during normal respiration show activity.

Respiratory center readjustments similar to these may occur under other types of adverse respiratory conditions, suggesting that there is a single scheme of bulbar respiratory center function for all similar conditions. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 4/4

ACC NR: AP7008665 SOURCE CODE: UR/0153/66/009/006/0869/0872

AUTHOR: Knyazova, R. N.; Chornova, G. N.; Zhukovskaya, G. B.

ORG: Inorganic Chemistry Department, Ural State University im. A. M. Gor'kiy (Kafodra neorganicheskoy khimii, Ural'skiy gosudarstvennyy universitet)

TITLE: Separation of selenium from tellurium based on different solubilities of magnesium salts of selenic and telluric acids

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 6, 1966, 869-872

TOPIC TAGS: selenium, tellurium, magnesium compound, selenic acid, solubility

ABSTRACT: A technique is proposed for separating selenium from tellurium, based on the different solubilities of magnesium selenate and orthotellurate, both of which are formed by roasting selenium and tellurium in air with magnesium oxide or Eschka's reagent. The solubility of the orthotellurate Mg_3TeO_6 was determined at several temperatures. It is shown that if Se and Te are roasted with a 20 to 30-fold excess of Eschka's reagent for 40 min at 800°C, a water-soluble selenate is formed together with an almost insoluble magnesium orthotellurate. The sinter is leached out with water and filtered. The filtrate contains the selenium, and the insoluble residue contains the tellurium. The following elements do not interfere with the separation: iron, copper, lead, silver, zinc, antimony, bismuth, chromium, aluminum, silicon, barium, calcium, sulfur, i. e., all the elements usually found in various

 UDC: 541.18.043.045 : 546.23 + 546.24

ACC NR: AP7008665

materials enriched with selenium and tellurium. Orig. art. has: 3 tables.

SUB CODE: 07/ SUBM DATE: 25Jan65/ ORIG REF: 000/ OTH REF: 001

Card 2/2

CHERNOVA, N. P.

USSR/Metallurgy - Steel, Corrosion Resistance 1 Mar 53

"Increasing the Stability of Metal Passivity," N. D. Tomashov, G. P. Chernova

DAN SSSR, Vol 89, No 1, pp 121-124

Investigates electrochem and corrosion characteristics of 4 stainless steels alloyed with 0.1% Pt, 0.1% Pd, 0.93% Pb, and 1.24% Cu, respectively, concluding that these cathodic additions considerably increase passivation capability of stainless steels. The same effect was shown by very thin layers of

259T17

Ag, Pt, and Pd deposited on the surface of ordinary stainless steel. Discusses the nature of passivity and increased resistance to corrosion of stainless steels in solns of H_2SO_4. Presented by Acad S. I. Vol'fkovich 9 Jan 53.

Evaluation B-76,507

CHEBNOVA, G. P. -- "The Effect of Cathodic Structural Components on Corrosion and Inertness of Stainless Steel." Cand Chem Sci, Inst of Physical Chemistry, Acad Sci USSR, Moscow, 1953. (RZhKhim, No 4, Feb 54)

TOMASHOV, N.D.; CHERNOVA, G.P.; ANASHKIN, R.D.

Effect of cathodic constituents of structure on chromium-nickel steel corrosion in sulfuric acid solution. Trudy Inst. fiz.khim. no.5:159-171 '55. (MLRA 9:5)

(Chromium-nickel steel--Corrosion) (Sulfuric acid)

CHERNOVA, G. P.

793
PROTECTION OF STAINLESS STEELS FROM CORROSION BY ANODIC POLARIZATION. N. D. Tomashov and G. P. Chernova. (Inst. of Physical Chemistry.). Doklady Akad. Nauk S.S.S.R. 104, 104-7(1955) Sept. 1. (In Russian)

Experiments with anodic polarization and weak current (from outside sources) applied as protection against corrosion of stainless steel in sulfuric acid gave positive results. (R.V.J.)

(1)

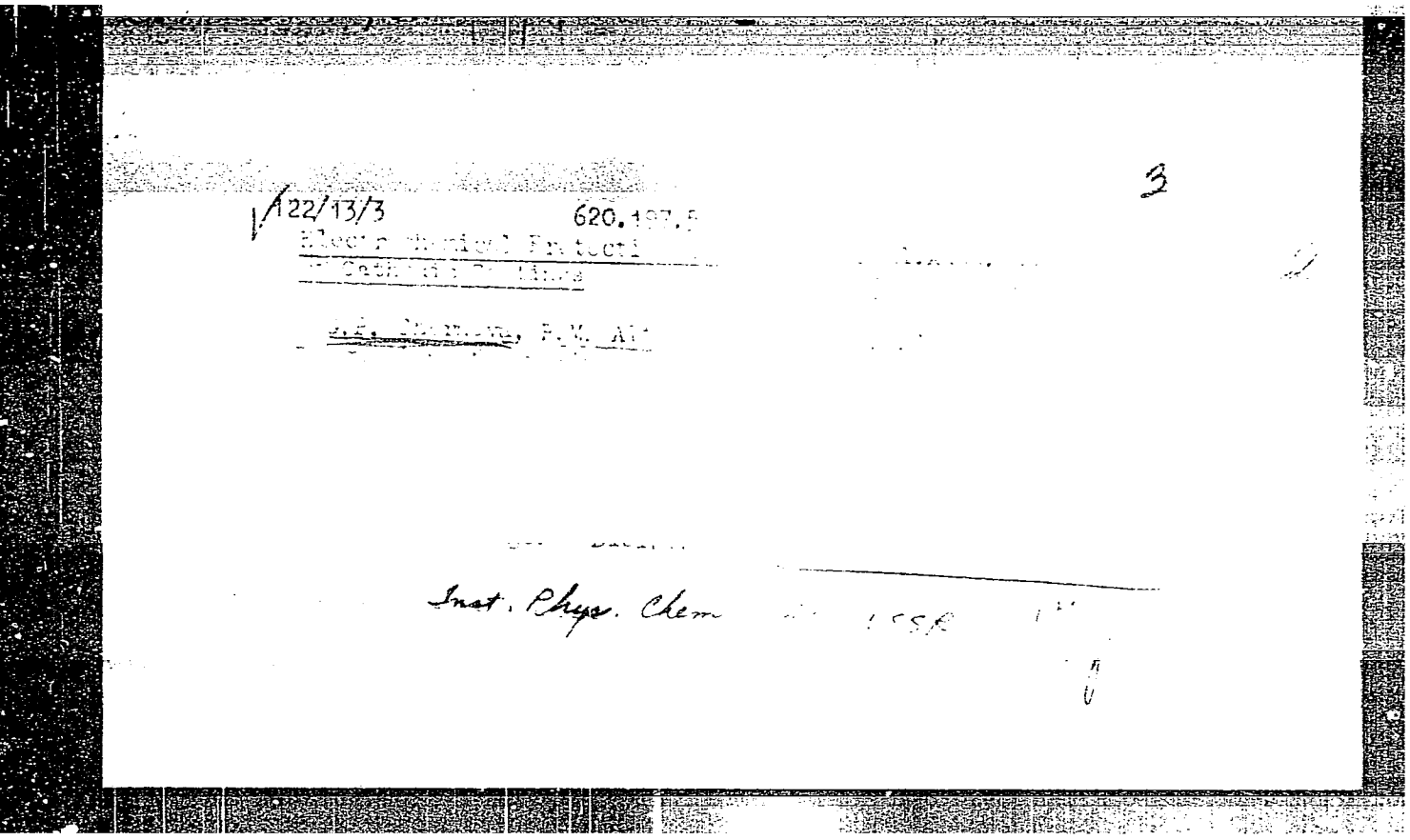
CHERNOVA, E. F.

passivity of stainless steels N. I.
Chernova, Trudy Komissii po [illegible]
[illegible]

135-48.—Theoretical analysis of the corro[illegible]
[illegible] showed that it [illegible]

[illegible] studied, then corrosion tests were performed in [illegible] mixts. of HCl and HNO_3. It was shown that [illegible] stainless steel with Pt (anodic polarization [illegible] stability limits of its passive state in H_2SO_4 at room and high temp. The study of anode polarization of the steel as a function of the concn. of H_2SO_4 as well as the results of the corrosion tests show the effectiveness of [illegible] increase with their "nobility" (from Cu to Pt) [illegible] better protection [illegible] original stainless steel.

N. Gorbovski



AUTHORS: Tomashov, N. D., Chernova, G. P., Al'tovskiy, R.M., Blinchevskiy, G. K. 32-3-17/52

TITLE: Development of a Method of Metal Dressing by a Solution for the Purpose of Studying the Effects of Passivity (Razvitiye metoda zachistki poverkhnosti metallov pod rastvorom dlya issledovaniya yavleniy passivnosti)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 3, pp. 299-303 (USSR)

ABSTRACT: The method mentioned in the title was developed by G.B. Klark and G. V. Akimov (Ref. 1). The system was improved in that metal-dressing is carried out on the entire part of the surface that is in contact with the electrolyte; the emery stone has an automatically controlled and constant velocity; the test vessel is thermally controlled, and experiments can be carried out in an atmosphere of different gases. A schematical drawing with an exact description is given. The influence of the composition of stainless steel on the velocity of the formation of the protective coating as well as that exercised by the composition of the solution upon the latter in tungsten, zirconium, and titanium was investigated. As

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Development of a Method of Metal Dressing by a Solution for the Purpose of Studying the Effects of Passivity

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may be seen from the results of investigation and from the diagrams given, the influence exercised by the composition of steel is of decisive importance. Among other things it was found that an increase of the concentration of chlorine ions in the solution renders re-establishment of the passivation of zirconium and titanium more difficult, whereas that of tungsten is rendered somewhat more easy. The re-passivation of titanium in a 3n HCl + 0.2n NaJ solution is independent of the influence exercised by the oxygen in the air, as it promotes the formation of the JI_3-complex ions. The method described makes it possible to carry out other investigations of this kind as e.g. that of the influence exercised by protective coatings upon the polarization properties of metals. There are 4 figures, and 2 references, 2 of which are Slavic.

ASSOCIATION: Institute of Physical Chemistry AS USSR (Institut fizicheskoy khimii Akademii nauk SSSR)

AVAILABLE: Library of Congress

Card 2/2 1. Metals-Passivity-Effects 2. Metals-Coating-Methods

CHERNOVA, G. P.

TOMASHOV, Nikon Danilovich. Prinimali uchastiye: TYUKINA, M.N.; PALEOLOG, Ye.N.; CHERNOVA, G.P.; MIKHAYLOVSKIY, Yu.N.; LUNEV, A.F.; TIMONOVA, M.A.; MODESTOVA, V.N.; MATVEYEVA, T.V.; BYALOBZHESKIY, A.V.; ZHUK, N.P.; SHREYDER, A.V.; TITOV, V.A.; VEDENEYEVA, M.A.; LOKOTILOV, A.A.; BERUKSHTIS, G.K.; DERYAGINA, O.G.; FEDOTOVA, A.Z.; FOKIN, M.N.; MIROLYUBOV, Ye.N.; ISAYEV, N.I.; AL'TOVSKIY, R.M.; SHCHIGOLEV, P.V.. YEGOROV, N.G., red.izd-va; KUZ'MIN, I.F., tekhn.red.

[Theory of the corrosion and the protection of metals] Teoriia korrozii i zashchity metallov. Moskva, Izd-vo Akad.nauk SSSR, 1959. 591 p. (MIRA 13:1)
(Corrosion and anticorrosives)

18.8310

27514
S/080/60/033/006/019/041/XX
D217/D302

AUTHORS: Tomashov, N.D., Chernova, G.P., and Markova, O.N.

TITLE: Influence of anodic polarization on the intercrystalline corrosion of stainless chromium-nickel steels

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 6, 1960, 1324 - 1334

TEXT: The possibility of protecting steels against general and intercrystalline corrosion by means of anodic polarization in sulphuric acid solutions and in solutions used for testing the tendency to intercrystalline corrosion, was investigated. The material tested was 2X18H9 steel (2Kh18N9) (free from titanium), containing 0.15 - 0.25 % C. This steel, as quenched from 1050° and subsequently tempered at 650° for 2 hours, is known to be liable to fail by intercrystalline corrosion. Untempered, however, it does not tend to fail by this mechanism. This steel was therefore tested in both conditions. The tendency to failure was determined after boiling in a solution of the following composition: 160 g

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Influence of anodic polarization ...

$CuSO_4 \cdot 5H_2O$ + 100 cm^3 H_2SO_4 (s.g. = 1.84) + 1000 ml H_2O with addition of copper filings. The behavior of the stainless steel 2Kh18N9 was investigated in the above range of potentials (from - 0.13 - +1.3 V) in order to study its corrosion behavior and develop methods of protecting it against intercrystalline corrosion. The study of the influence of anodic polarization on intercrystalline corrosion was carried out by plotting polarization curves by potentiostatic methods and by corrosion tests at given potentials. It was found that the range of the stable, passive condition of quenched and tempered 2Kh18N9 steels in sulphuric acid solutions lies between + 0.51 and + 0.83 V. In the tempered condition, this range reduces to 0 to + 0.4 V. In the stable, passive state, this steel, whether tempered or quenched, resists failure by intercrystalline corrosion in sulphuric acid solutions, the general corrosion is extremely slight and anodic protection in this case is possible. With an increase in aggressiveness of the medium, the stable, passive range of the tempered steel is reduced to a greater extent than that of quenched steel, and in a strongly aggres-

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Influence of anodic polarization ...

sive medium may be entirely absent. In the transpassivity region, the tempered steel is liable to fail be intercrystalline corrosion, whereas the quenched steel is not. Protecti[redacted] against intercrystalline corrosion in the passive potential range by means of anodic polarization is possible both in the copper su[redacted]phate-base testing solution and in solutions containing 10 % HNO_3 + 1 or 2 % NaF. There are [redacted] figures, 4 tables and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc. The reference to the Eng[redacted]ish-language publication reads as follows: R. Edelenau, Na[redacted]re, 17, 739, 1954.

SUBMITTED: November 24, 1959

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S/137/62/000/001/187/237
A006/A101

AUTHORS: Tomashov, N. D., Al'tovskiy, R. M., Chernova, G. P., Arteyev, A. D.

TITLE: Corrosion resistance of titanium alloyed with molybdenum, chromium and palladium

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 83, abstract 1I584 (V sb. "Korroziya i zashchita konstrukts. metallich. materialov", Moscow, Mashgiz, 1961, 173 - 186)

TEXT: Alloying of Ti with palladium raises considerably its corrosion resistance in H_2SO_4 and HCl. Considerable reduction of the Ti corrosion rate is already observed when it is alloyed with a small Pd amount (0.1%). An increase of the Pd content in the alloy > 2% is not recommended. Electrochemical investigations have shown that an increase in the Ti corrosion resistance when it is alloyed with Pd, results from the shift of the stationary potential of the alloy to a range of values where Ti is partially or fully passive, due to the reduced overvoltage of the cathodic reaction. Alloying of Ti with molybdenum increases Ti resistance due to the considerably reduced ability of the alloy to anodic dissolving as compared with non-alloyed Ti. Alloying of Ti with chromium does not

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Corrosion resistance of titanium alloyed with...

raise its corrosion resistance, and even reduces same in some cases, since Cr is less prone to passivity than Ti in H_2SO_4 and HCl, at a potential corresponding to a stationary potential of Ti. Ternary Ti-Pd-Mo alloys and Ti-Pd-Cr alloys are more resistant than the binary Ti-Pd alloy. This is due to a decrease in the current of anodic Ti dissolving near the potential of full passivation, when it is alloyed with Mo or Cr. There are 17 references.

Author's summary

[Abstracter's note: Complete translation]

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21924

S/184/61/000/003/002/004
D041/D113

18.8310 also 1138, 1573

AUTHOR: Tomashov, N.D., Doctor of Chemical Sciences, Professor, Chernova, G.P., Candidate of Chemical Sciences

TITLE: New method of electrochemical protection of metals against corrosion-anode polarization.

PERIODICAL: Khimicheskoye mashinostroyeniye, no. 3, 1961, 30-33

TEXT: The authors state that there are many electric-protection methods which are applied in industry in order to prevent metals from corroding as described by N.D. Tomashov (Ref. 1: Teoriya korrozii i zashchity metallov [Theory of corrosion and metal protection], Izd. AN SSSR, 1959), (Ref.2: Zashchita metallicheskikh konstruktsiy ot korrozii protektorami [Protection of metal structures from corrosion by means of protectors], Oborongiz, 1940), and by V.A. Pritula (Ref. 3: Katodnaya zashchita zavodskoy apparatury [Cathode protection of industrial equipment], Goskhimizdat, 1954). None of these methods use anode polarization. Nevertheless, anode polarization can be used as corrosion protection, if a metal in a given medium tends to passivation; the passivity of the metal considerably reduces the anodic dissolving. The resistance to corrosion of some metals and alloys (iron, stain-

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less steel, titanium, zirconium, tantalum, etc.) is based on the passivity phenomena. The passivity of these metals can be established by increasing the oxidation effect of the medium, or by anode polarization of the metal. A constant passivity potential of the metal can be maintained by an electronic automatic-regulation device, i.e. a potentiostat. The displacement of the metal-potential in the electrolyte solution necessary for obtaining the passive state can be generated by the following methods: by changing the oxidation-deoxidation potential of the medium as described by J.D.Berwick and U.R. Evans (Ref.4: "Journal of Applied Chemistry", v. 2, no. 10, 1952), by anode polarization from an external electric source as described by C. Edeleanu (Ref. 6: "Nature", v. 173, no. 4407, 1954), through contact with an electrically positive metal having a large enough surface as described by the authors (Ref. 7 Tomashov, N.D., Chernova, G.P., Issledovaniya po nerzhaveyushchim stalyam [Stainless-steel investigations], izd. AN SSSR, 1956), by B.W. Buck Sloope and H. Leidheiser (Ref. 8: "Corrosion", v. 15, no. 11, 1959) and by M. Stern and H. Wissenberg (Ref. 9: "Journal of the Electrochem. Soc." v. 106, no. 9, 1959), by introducing ions of precious metals into the solution, and by introducing a cathode hardener into the alloy. In order to determine the potential range within which the metal has the smallest dissolving speed, potentiostatical curves must be plotted. Fig.2 shows such curves for 2X18H9

(2Kh18N9) steel. Since inter-crystalline corrosion is one of the disadvantages of stainless steel, the authors together with O.N. Markova (Ref. 16: "Zhurnal prikladnoy khimii", v. 33, no. 6, 1960) investigated the effects of anode polarization on the above-mentioned phenomena using 2Kh18N9 steel which tends considerably to inter-crystalline corrosion after tempering at 650° for 2 hours. The results are compiled in table 2. Table 3 shows the limits of the stable passive-state range of 2Kh18N9 steel hardened at 1050° (15 minutes) and tempered at 650° (2 hours) in H_2SO_4 solutions. Fig.4 shows the anode polarization curves for titanium. The authors state that anode electrochemical protection can be used when the aggressive fluid has a good conductivity. The potential range in which the metal is sufficiently passive is large enough for the reliable operation of an industrial automatic potentiostat, this value must not be smaller than 50 millivolts as described by J.D. Sudbury, O.L. Riggs and D.A. Schock (Ref. 17: "Corrosion", v. 16, no. 2, 1960). At present, the anode protection method is being introduced into industry. It has been proposed for titanium under the effect of HCl and H_2SO_4 as described by A.H. Barber (Ref. 19: "Corrosion, prevention and control", v. 6, no. 11, 1959). Anodic protection of devices during sulfurization is already being used as treated by D.A. Schock, O.L.Riggs,

and J.D. Sudbury (Ref. 21: "Corrosion", v. 16, no. 2, 1960) and by O.L.Riggs, M. Hutchison, N.L. Conger (Ref. 22: "Corrosion", v. 16, no. 2, 1960). The passivity of the metal can be kept constant not only through anode polarization from an external current source, but also through electric contact of the protected part with the metallic protector of an electric furnace. M. Pražak (Czechoslovakian patents, 86080, 150157) has proposed such a protection method for chrome-nickel steels in hot H_2SO_4 solutions; he recommends metal oxides, i.e. Fe_3O_4 or MnO_2 as protector materials. The experimental results obtained and the above-mentioned literature show that wide-scale industrial application of the anodic method for protecting carbon steel, stainless steel, titanium and other metals (which have a passivation tendency) from corrosion, is possible. There are 5 figures, 4 tables, and 22 references, 14 Soviet-bloc and 8 non-Soviet bloc. The four most recent English-language publications read as follows: J.D. Sudbury, O.L. Riggs, D.A. Schock, "Corrosion", v. 16, no. 2, 1960; A.H. Barber, "Corrosion, prevention and control", v. 6, no. 11, 1959; D.A. Schock, O.L. Riggs, J.D. Sudbury "Corrosion", v. 16, no. 2, 1960; O.L. Riggs, M. Hutchison, N.L. Conger, "Corrosion", v. 16, no. 2, 1960.

New method of electrochemical protection .....

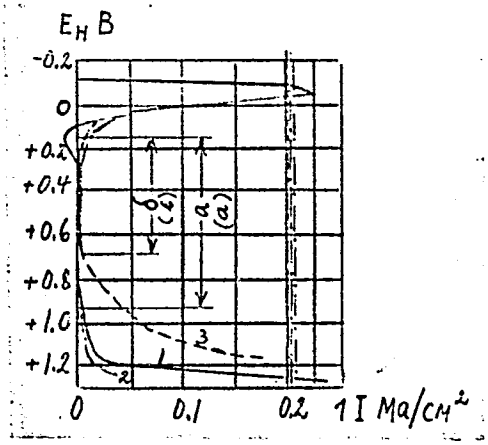

Fig.2: Anode polarization curves of 2Kh18N9 tempered steel. Legend: 1) in 20-% H_2SO_4 at 25°. 2) In 50-% H_2SO_4 at 50°. 3) In 50-% H_2SO_4 at 100°. a) protecting potential range for curves 1 and 2. b) the same for curve 3.

Фиг. 2. Кривые анодной поляризации закаленной стали 2Х18Н9:

1 — в 20%-ной H_2SO_4 при 25°; *2* — в 50%-ной H_2SO_4 при 50°; *3* — в 50%-ной H_2SO_4 при 100°; а — область защитного потенциала, для кривых *1* и *2*; *б* — то же для кривой *3*.

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New method of electrochemical protection .....

Таблица 1

Влияние анодной поляризации на скорость коррозии нержавеющей стали 1Х18Н9 в серной кислоте

① Концентрация H_2SO_4 в %	② Температура в °С	③ Плотность анодного тока в *мка/см²*	④ Скорость коррозии в *г/м²час*
30	18	10	0,06
30	18	0	4,0
30	50	2,5	0,1
30	50	0	53
50	50	2,5	0,15
50	50	0	217
60	50	2,5	0,15
60	50	0	183

Table 1: The effect of anode polarization on the corrosion speed of 1Х18Н9 (1Kh18N9) stainless steel.
Legend: 1) H_2SO_4 concentration in %. 2) Temperature in °C. 3) anode current density in microampere/cm^2. 4) Corrosion speed in G/m^2hour.

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New method of electrochemical protection .....

Влияние анодной поляризации на межкристаллитную коррозию стали 2Х18Н9 при различных потенциалах в растворах серной кислоты

Table 2

Термообработка стали (1)	Концентрация H_2SO_4 в % С (2)	Температура в °С (3)	Время испытания в час. (4)	Потенциал в +в (5)	Скорость коррозии в $г/м^2час$ (6)	Наличие (+), отсутствие (–) межкристаллитной коррозии (7)
Отпуск при 650° (2 часа) (8)	20	25	5,5	0	2,3	+
			6,0	0,065	1,0	+
			7,0	0,260	0,24	+
			41,0	0,510	0	—
			42,0	0,830	0,15	—
	50	50	36,0	0,750	0,06	—
	50	100	5,0	0,750	0,7	+
Закалка 1050°С (15 мин.) (9)	50	100	10,0	0,750	0,017	—

Table 2: The effect of anode polarization on inter-crystalline corrosion of 2Kh18N9 steel at various potentials in H_2SO_4 solutions.

Legend: 1) Thermal treatment of steel. 2) H_2SO_2 concentration in % C. 3) Temperature in °C. 4) Testing time in hours. 5) Potential in volts. 6) Corrosion speed in G/m^2hour. 7) Presence (+), absence (-) of inter-crystalline corrosion. 8) Tempering at 650° (2 hours). 9) Hardening at 1050° (15 minutes).

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New method of electrochemical protection .....

Boundaries of the regions of the stable passive state of 2Kh18N9 steel quenched from 1050°C. (15 mins) and annealed at 650° (2 hours) in sulfuric acid solutions.

Границы областей устойчивого пассивного состояния стали 2Х18Н9, закаленной с 1050° (15 мин.) и отпущенной при 650° (2 часа) в растворах серной кислоты

Концентрация H_2SO_4 в % (1)	Температура в °С (2)	Термообработка (3)	Значение потенциалов, соответствующие области устойчивого пассивного состояния в +в (4)
20	25	Закалка (5) Закалка+отпуск (6)	0,1—1,0 0,4—1,0
50	25	Закалка+отпуск (7)	0,44—1,0
50	50	Закалка (8) Закалка+отпуск (9)	0,13—0,83 0,63—0,83
50	100	Закалка (10) Закалка+отпуск (11)	0,19—0,62 Отсутствует (12)

Table 3: 1) H_2SO_4 concentration in %. 2) Temperature in °C. 3) Thermal treatment. 4) Potential values corresponding to the stable passive-state range in + volts. 5) Hardening. 6) Temper hardening. 7) Temper hardening. 8) Hardening. 9) Temper hardening. 10) Hardening. 11) Temper hardening. 12) Absence.

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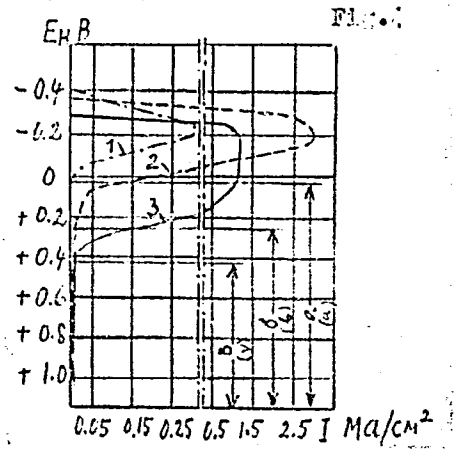
Фиг. 4. Кривые анодной поляризации титана:
1 — в 40%-ной H_2SO_4 при 25°; *2* — 40%-ной H_2SO_4 при 50°; *3* — в 80%-ной H_2SO_4 при 25°; *a*, *б* и *в* — области защитных потенциалов, соответствующие кривым *1*, *2* и *3*.

Fig.4: Anode polarization curves of titanium

Fig.4: 1) In a 40% H_2SO_4 at 25°. 2) In a 40% H_2SO_4 at 50°. 3) In an 80% H_2SO_4 at 25°. a,b, and v-protecting potential ranges corresponding to curves 1,2, and 3.

Fig.4



Card 9/9

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B101/B216

18 8300

AUTHORS: Tomashov, N. D., Chernova, G. P., and Al'tovskiy, R. M. (Moscow)

TITLE: Study of the mechanism of electrochemical corrosion of titanium. III. Corrosion and electrochemical behavior of titanium and titanium alloys with platinum and palladium in solutions of sulfuric and hydrochloric acid

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 5, 1961, 1068-1077

TEXT: The corrosion resistance of titanium to high acid concentrations and temperatures above room temperature was improved by alloying with Pt or Pd. The following alloys were made of titanium of the type BT-1 (VT-1), alloyed in a vacuum high-frequency furnace: no. 1: Ti + 1 % Pt; no. 2: Ti + 2 % Pt; no. 3: Ti + 1 % Pd; no. 4: Ti + 2 % Pd; and no. 5: pure Ti (remolten VT-1) The electrochemical characteristics of these samples were studied by recording the potentiostatic polarization curves with an electronic potentiostat. Fig. 1 shows the results obtained from 40 % H_2SO_4 for Ti and Ti + 1 % Pt with the characteristic points $E_{ст}$ = steady potential; $E_п$ = passivation potential corresponding to the passivation current $I_п$;

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$E_{пп}$ = potential of complete passivation, corresponding to the current $I_{п.с}$ of the passive state; E_a = activation potential; I_k is the cathodic, and I_a the anodic current; E_H = potential of the hydrogen electrode. The other alloys showed similar results. Fig. 2 presents those obtained from 40, 60, and 70 % H_2SO_4. As may be seen from Fig. 4, there are two corrosion maxima with Ti, but only one with the alloys. Anodic polarization in HCl showed the same behavior as in H_2SO_4. With Ti in 20 % HCl (Fig 6), however, a cathodic passivity occurred due to the formation of a protective layer of titanium hydride. The results are as follows: 1) Titanium alloys containing Pt and Pd are much more resistant to corrosion than pure Ti. 2) Increased temperature and acid concentration complicates the passivation of Ti because the potential is shifted in the direction of positive values. 3) In alloys of Ti containing Pt and Pd, the steady potential becomes more positive due to a reduction of the hydrogen overvoltage by 350-400 mv and, thus, lies within the range where Ti is completely or almost completely passivated. This fact leads to an increase in the corrosion resistance of these alloys. There are 7 figures, 2 tables, and 11 references: 5 Soviet-bloc and 6 non-Soviet-bloc. The 2 most important references to English-

language publications read as follows: J. B. Cotton, Chemistry and Industry, no. 3, 68, 1958; L. B. Golden, I. R. Lane, W. L. Acherman, Industr. and Engng. Chem., 44, 1930, 1952.

ASSOCIATION: Akademiya nauk SSSR, Institut fizicheskoy khimii (Academy of Sciences, USSR, Institute of Physical Chemistry)

SUBMITTED: August 3, 1959

Fig. 1: Potentiostatic curves of anodic polarization of Ti and Ti + 1 % Pt in 40 % H_2SO_4 at 25 and 50°C. Legend: a) schematic anodic potentiostatic curve (explanation in the text); b) cathodic curves: 1) Ti in 40 % H_2SO_4 at 25°C and with increasing I; 2) idem with decreasing I; 3) Ti at 50°C; 4) Ti + 1 % Pt at 25°C; 5) idem at 50°C; anodic curves: 6) Ti at 25°C and with increasing I; 7) idem with decreasing I; 8) Ti at 50°C; 9) Ti + 1 % Pt at 25°C; 10) idem at 50°C.